

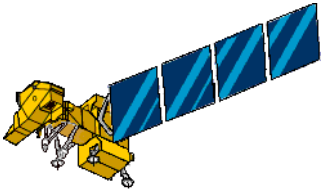
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# ***Landsat 7***

## **Data Exchange and Common User Products**

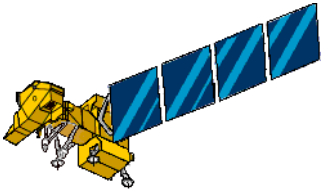
**by John Boyd, Dave Carneggie, and Steve Covington**





## ***Data Exchange and Common User Products***

- **MOU Requirements for Common User Product (CUP) and Data Exchange (DE)**
- **Background for this Presentation**
- **General CUP and DE Assumptions**
- **Station DE Proposal**
- **Comments on Station DE Proposal**
- **U.S. Options for Station DE Proposal**
- **Comments on U.S. Options**
- **Summary and Issues**



## **Data Exchange and Common User Product**

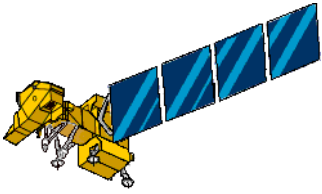
### **MOU Requirements for CUP:**

- **Section II.B.2: “Produce Landsat 7 data products in accordance with such formats as may be agreed”.**

### **MOU Requirements for DE:**

- **Section II.B.8a-d (paraphrased)**
  - **Acquire a reasonable quantity of data for key government programs;**
  - **Exchange limited amounts of data for assessing data quality;**
  - **Provide sufficient quantities of data if significant loss of spacecraft capability; and**
  - **Provide NOAA or another IGS with unenhanced data;**

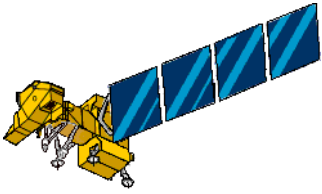
**All “in a mutually agreeable format and media.”**



# ***Data Exchange and Common User Product***

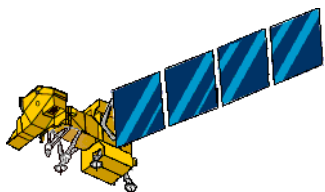
## **Background for Data Exchange Presentation**

- **First LTWG (Sioux Falls); Level 0Rp mentioned for DE&CUP**
- **Second LTWG (Annapolis); Level 0Rp discussed for DE&CUP**
- **Third LTWG (Santa Barbara); Level 0Rp proposed for DE&CUP, Raw discussed for DE**
- **Fourth LTWG (Annapolis); Raw proposed for Data Exchange; Level 0Rp proposed for Common User Product**

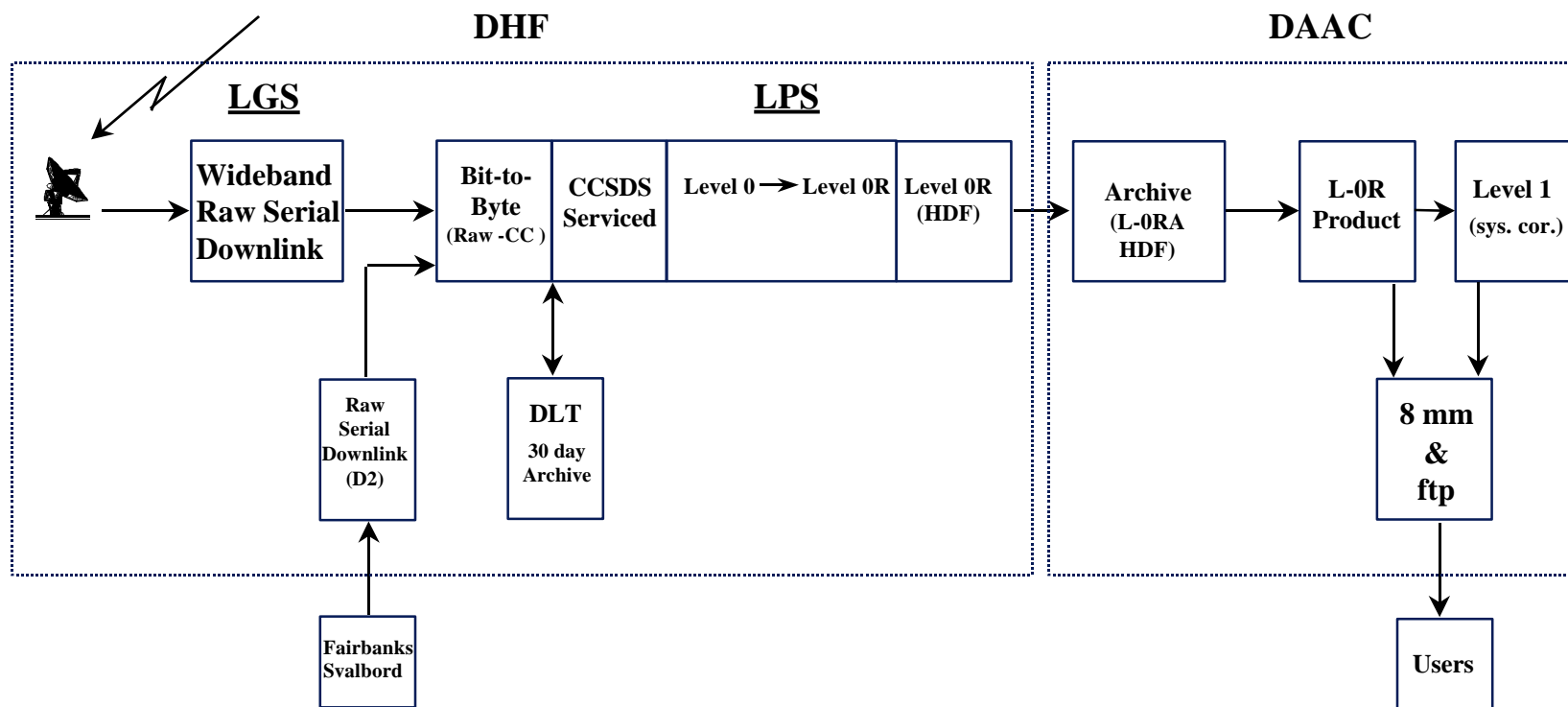


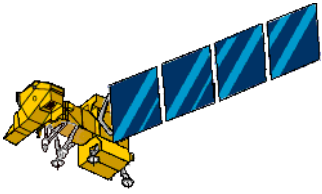
## ***Data Exchange and Common User Product***

- **Summary of LTWG-4 Consensus**
  - **General agreement reached to process raw computer-compatible data to remove CCSDS components and to concatenate ETM+ Data Blocks, allowing greater flexibility in ground system design**
  - **ESA proposed modification that would organize ETM+ Data Blocks into major frames**
  - **EDC took action to investigate their proposal and to propose draft exchange format**
  - **Determined that proper handling of the PCD/Status field and minor frame pointer made implementation of either approach impractical**
  - **Concluded that a single format could not adequately address requirements of both high- and low-level archives**
  - **Proceeded to propose dual formats for data exchange**



# *U.S. Landsat 7 Data Processing Flow*

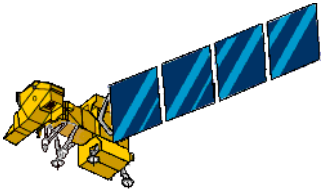




## ***Data Exchange and Common User Product***

### **CUP Assumptions:**

- **The requirements for a CUP found in the draft MOU are generally accepted and will be adopted in station MOU agreements.**
- **The CUP is primarily for the benefit of the “user community”, but stations can also request and purchase the CUP from another station at the established price.**
- **A station has the option to ingest, archive, and redistribute the CUP, or products derived from the CUP, which was acquired from another station.**
- **The CUP format will be the same as the U.S. Level 0R product.**

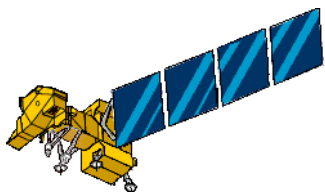


## ***Data Exchange and Common User Product***

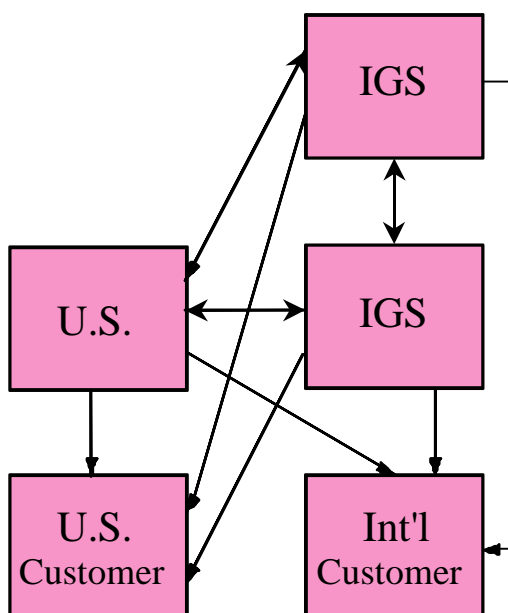
### **DE Assumptions:**

- **The requirements for DE found in the draft MOU are generally accepted and will be adopted in station MOU agreements.**
- **The MOU does not require an IGS to establish a DE input capability (i.e. permits a one-way exchange).**
- **Data exchanged between stations can be archived.**
- **Stations will be given the option of two different formats for DE.**
- **Data exchanged between stations may be redistributed.**
- **There may be compensation for data exchanged between stations other than for QA.**
- **In the event of a major SSR failure, the station DE proposal may be modified.**

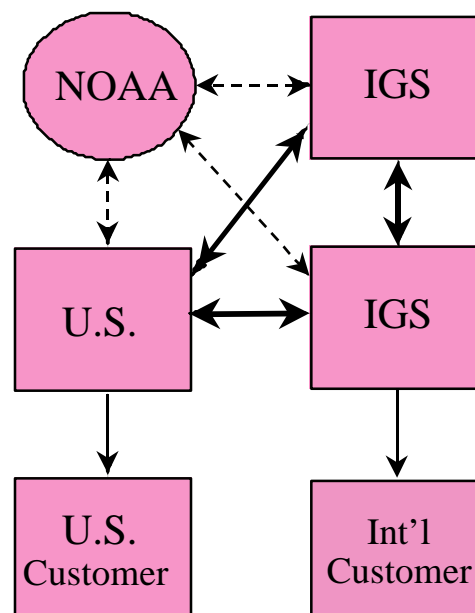




# *Data Exchange and Common User Product*

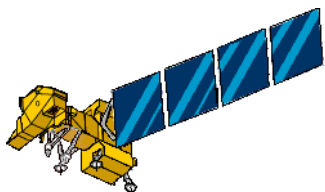


**Common User Product**



**Data Exchange**

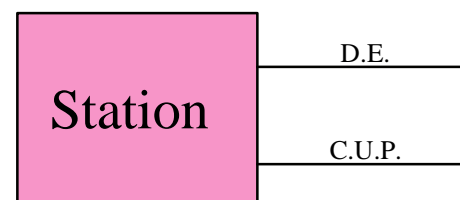
<b>Legend:</b>	
<b>Data Exchange</b>	
<b>CUP</b>	
<b>Coordination</b>	



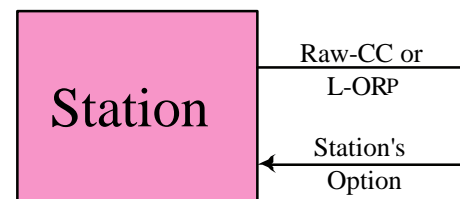
## *Data Exchange and Common User Product*

### STATION DE PROPOSAL

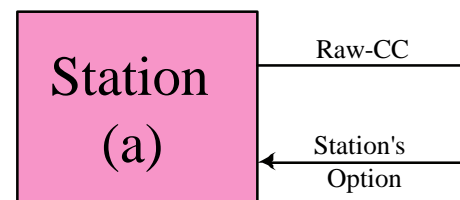
**MOU Requirements:**



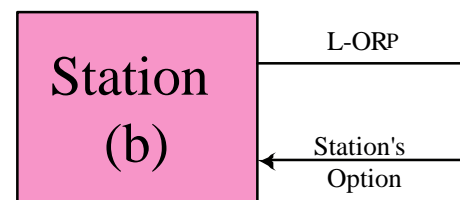
**DE Proposal:**

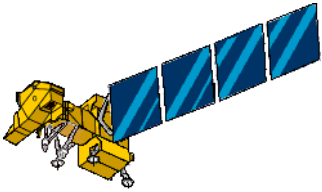


**Example A: Satisfies DE proposal, but not CUP:**



**Example B: Meets the MOU requirement for DE and CUP:**

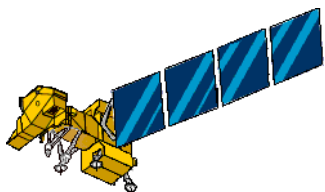




# **Data Exchange and Common User Product**

## **Comments on Station DE Proposal:**

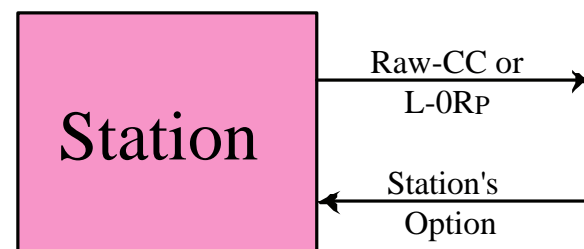
- Stations have the option of two different formats for data exchange to accommodate both high-level and low-level archives:
  - Raw Computer Compatible (Raw-CC)
    - » Raw-CC can be produced by stations with low-level archives
  - Level 0R product format (L0Rp)
    - » L0Rp can be produced by stations with low- or high-level archives
- Provides stations the option to develop DE ingest capability or not.
- Allows stations which choose the L-ORp for data exchange to meet the MOU requirement for both DE and the CUP.
- Requires stations who choose Raw-CC for data exchange to also implement L0Rp for the CUP.
- If a station chooses to output L0Rp for data exchange, the receiving station may not be able to archive the product in a low-level archive (e.g. CEOARCH, FRED, etc...)



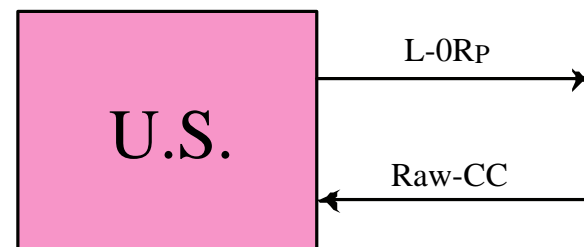
## *Data Exchange and Common User Product*

### U.S. Options for Meeting the DE Proposal:

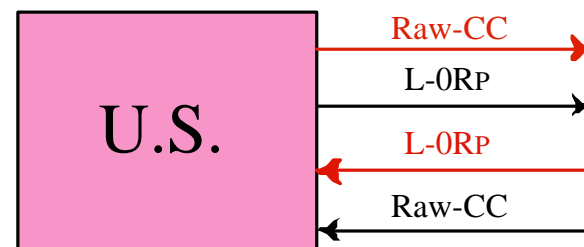
#### Station DE Proposal

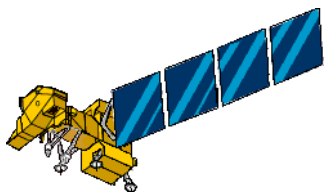


#### (a) Current Design



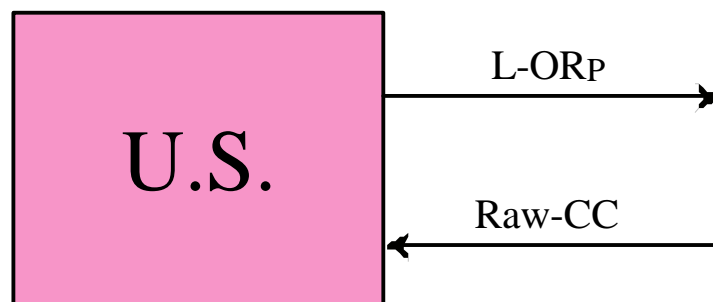
#### (b) Proposed Modifications





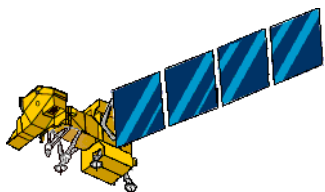
## **Data Exchange and Common User Product**

### **U.S. Option (a): Current Design:**



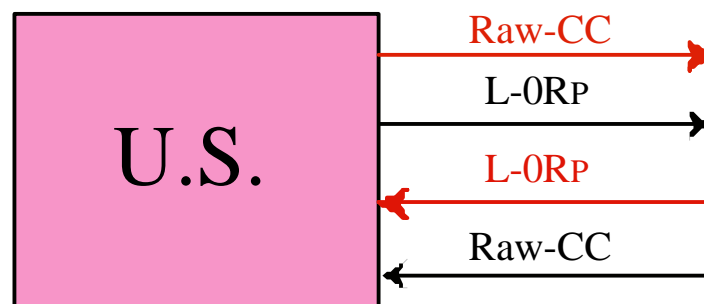
### **Comments:**

- **Current capabilities of as-built U.S. Landsat 7 Ground System accommodates the Station DE Proposal.**
- **Current design ingests Raw-CC only.**
- **Current design does not provide for Raw-CC data output.**
- **All Raw-CC data inputs would be processed into the U.S. DAAC Archive**



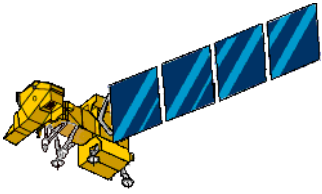
## *Data Exchange and Common User Product*

### **U.S. Option (b): Proposed Modifications:**



### **Comments**

- Accommodates all of the possible framework permutations
- Requires modifications to ingest L-0Rp in the US Archive
- Requires modifications to output Raw-CC by extending the 30-day Raw-CC archive to a much longer period in time.



## ***Data Exchange and Common User Product***

### **Summary and Issues:**

- **Archiving and redistribution of data exchanged between stations.**
- **Archiving and redistribution of the Common User Product?**
- **Recorder Failure Scenario**
- **Modifications of the L-0R product (MDA proposal)**